

REMARKS

By the above actions, claim 13 has been amended. In view of these actions and the following remarks, further consideration of this application is requested.

With regard to the rejections of claims 10, 12 and 13 under 35 USC § 112, it is submitted that the above amendments eliminates all of the issues raised by the Examiner so that new claim 13 should be found to be both clear and definite as well as fully consistent and supported by the specification. In particular, the term “second heating/cooling surface” has been replaced by the term “second heat exchanger” in response to the Examiner’s objection under 37 CFR 1.75 (d)(1) on page 2 of the Office Action, which refers to an alleged lack of correspondence between the claim terminology and the corresponding terminology in the specification, which refers to a heat exchanger.

Further, the term “selectively” was deleted for all means mentioned in claim 13 and replaced by a phrase which defines the existence of “a connecting and a non-connecting state,” addresses the objections on page 2, lower portion and page 3 of the Office Action, according to which the originally used term “selective” is interpreted by the Examiner as indicating, that the corresponding means should connect the corresponding elements, like, for example, the first heating/cooling surface with the heat exchanger, exclusively. This interpretation of “selective” was not intended, and therefore, the above mentioned amendment was made. Accordingly, the means now have a connecting and a non-connecting state, which means they optionally fluid conductively connect the respective elements. Put in different words, the corresponding means have a “open state” and a “closed state” in which the corresponding elements are fluid conductively connected and not fluid conductively connected, respectively. Accordingly, the different means of claim 13 enable a fluid connection between a first element like. e.g.. the heating/cooling surface and (at least) a second element, like, e.g., the first heat exchanger. That means, the connection is not exclusive to said second element, therefore a fluid connection between the first element and a third element like, e.g., the second heat exchanger, can also be enabled by the corresponding means.

Regarding the comment on page 2, last sentence of the Office Action, according to which it is considered unclear which elements in the heat transfer medium circuit according to Figure 1 correspond to the four means, the following is submitted:

the function of the means for fluid conductively connecting the heating/cooling surface with the first heat exchanger can be performed by valve 90 according to Figure 1;

the function of the means for fluid conductively connecting the second heat exchanger with the first heat exchanger can be performed by valve 72 according to Figure 1;

the function of the means for fluid conductively connecting the heating/cooling surface with the heat source can be performed by the combination of the valves 90 and 54 according to Figure 1;

the function of the means for fluid conductively connecting the second heat exchanger with the heat source can be performed by the valve 54 according to Figure 1.

Therefore, also the rejection under 35 U.S.C. § 112, first paragraph, raised on page 3 of the Office Action should have now be overcome as well.

Turning now to the Examiner's prior art rejection of the claims under 35 U.S.C. § 103 as being unpatentable over the combined teachings of the Herta and Saperstein references, optionally viewed further with either or both of the Brocx, Rafalovich, and Baier patents, the following reasons are presented as justifying withdrawal of this rejection.

First, as now amended, claim 13 defines that applicants' device for climate control of a vehicle interior further comprises a circulation pump (see element 64 in Fig. 1) integrated in the heat transfer medium circuit, which circulation pump is arranged for pumping at least part of the heat transfer medium, coming directly from the heat source, through the first heat exchanger. That means the heat transfer medium can be pumped through the first heat exchanger without first going through an other element of the heat transfer medium circuit, like the heating/cooling surface, the first heat exchanger or the second heat exchanger.

According to the description in the application, the heat transfer medium circuit 14 according to Figure 1 can be operated in a direct and an indirect heating mode. Paragraph [0038] on page 8 of the original description describes the concept of direct heating of the heating/cooling surface 92 and the heat exchanger 86. This is done by a hot heat transfer medium, which is made available from an engine cooling circuit through the feed inlet 50 shown in Figure 1 (see page 7, paragraph [0035], second sentence of the original description). As described on page 8, paragraph [0040] of the original description, in the direct heating mode, the reservoir 34 is charged using the circulation pump 64 which, with the valve 72

opened, delivers the heat transfer medium to the heat exchanger 86 and, with the valve 90 opened also to the heating/cooling surface 92.

Direct and indirect heating can be performed at the same time with both the valve 72 and also the valve 54 being opened (see last sentence of paragraph [0040]). In this case, the heat transfer medium from the feed inlet 50 is at least partly pumped through the first heat exchanger 66 in the heat/cold reservoir 34. In case the valve 90 is closed, basically, the entire heat transfer medium coming from the heat source is directly pumped through the first heat exchanger 66. This is possible, as the pump direction of the circulation pump 64 is set in the same direction as the flow direction of the heat transfer medium coming through the feed inlet 50, as shown in Figure 1.

Amended claim 13 is not rendered obvious by the prior art as applied by the Examiner for the following reasons.

The device for air conditioning of a motor vehicle interior according to Herta et al. can be operated in a number of operating modes listed in paragraphs [0029] through [0044]. These operating modes include an operating mode identified as operating mode E, in which with the solenoid valves 19, 20 are opened so that hot water coming from the heat/cold reservoir 33 is delivered by the circulation pump 18 through the heat exchangers 17, 12 (compare page 3, paragraphs [0038] and [0039] of Herta et al.). In a further operating mode F, the solenoid valve 19 is closed and the heat exchange medium is delivered directly from the auxiliary heater 14 (corresponding to the heat source of claim 13) through the heat exchanger 12 (compare page 3, paragraphs [0040] and [0041] of Herta et al.).

Also, according to Herta et al., the operating modes E and F can be combined. In this case, the heat transfer medium coming from the auxiliary motor vehicle heater 14 or heat source, first flows through the heat exchanger 12 and only subsequently through the heat exchanger 17 in the heat/cold reservoir 33 if the solenoid valve 19 is opened (see page 3, paragraph [0043] of Herta et al.).

Accordingly, Herta et al. does not disclose an operating mode, in which the heat transfer medium coming directly from the heat source, i.e., the auxiliary heater 14 or the engine 10, is pumped by the circulation pump 18 first through the heat exchanger 17 of the heat/cold reservoir 33, as recited in currently amended claim 13 of this application.

The arrangement according to claim 13 provides the following advantages over the Herta et al. arrangement. The maximum obtainable temperature for the heat transfer medium

routed through the second heat exchanger and the heating/cooling surface can be increased. This is because, according to this application, the heat transfer medium coming from the heat source is supplied without a loss of temperature into the heat exchanger of the heat/cold reservoir. Therein, the temperature can be raised significantly before the heat transfer medium is delivered to the second heat exchanger and the heating/cooling surface. On the other hand, according to Herta et al., however, the medium coming from the auxiliary heater 14 or engine 10 is first cooled off in the heat exchanger 12 before it is routed into the heat exchanger 17 of the heat/cold reservoir 33. Therefore, the maximum temperature obtainable for the heat transfer medium for heating the interior of the vehicle is lower in comparison to that obtainable with the invention, so that the device according to amended claim 13 provides for a significantly improved heating performance in the interior of the vehicle.

As for the Saperstein et al., Brocx et al., Rafalovich et al. or Baier et al. references, they give no suggest which would enable the person skilled in the art to arrive at the device in accordance with the invention for the following reasons.

According to Saperstein et al., the engine 30 does not and cannot serve as a heat source for the heat exchangers 68, 69 and 86 shown in Figure 1, as it is not connected to the heat transfer medium circuit. Therefore, Saperstein et al. provides no indication for the person skilled in the art to come up with the above described arrangement of the invention in which the circulation pump pumps at least part of the heat transfer medium coming directly from a heat source through the heat exchanger of a heat/cold reservoir.

Brocx et al. discloses a heating system in which a heater 30 for a sleeper unit, a heater unit 4 for a cab and a bypass passageway with a hose 42 are connected to a water jacket of an engine 6 by two manifolds 10, 14. No heat/cold reservoir is disclosed as being present in the device of the Brocx et al. patent. Therefore, this reference cannot give any indication to the person skilled in the art to directly pump heat transfer medium coming from a heat source, like the engine 6, into a heat/cold reservoir. Further, the parallel arrangement of the heater unit 4 and the auxiliary heater 30 according to Brocx et al. is not applicable to the system of Herta et al. because of the presence of the heat exchanger 17 and the auxiliary heater 14 in the Herta et al. system, which could not function properly if the bypass passageway of Brocx et al. were incorporated along with the 3-way valve 20 for controlling pressures in the fluid lines of their heat exchangers.

Rafalovich et al. teaches the provision of a thermal energy storage apparatus including several fluid circuits for delivering the thermal energy to both a passenger compartment and a component, such as a battery (see, Fig. 34). One of the circuits includes an engine 120, which could be viewed as a heat source according to the invention. However, heat exchangers provided according to Rafalovich for heating the interior of the vehicle, like the heat exchangers 910 and 920 are included in a separate refrigerant loop 168. The refrigerant loop 168 is not connected directly to the loop including the engine 120. Therefore, the person skilled in the art would not be provided with a teaching or suggestion by Rafalovich et al. which would lead to the invention present invention in which the heat transfer medium coming is pumped directly from the heat source through the first heat exchanger.

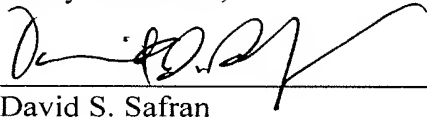
Baier et al., like Brocx et al., has no heat/cold reservoir, and therefore, also cannot lead the person skilled in the art to the device according to the presently claimed invention.

Last, the arguments presented in applicants' response to of October 5, 2006, further support the patentability of the present invention and are hereby incorporated by reference for the sake of brevity.

On the basis of the foregoing, in the absence of new and more pertinent prior art being discovered, it is submitted that this application is in condition for allowance and action to that effect is hereby requested. However, even though the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise, which could be eliminated through discussions with applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

Respectfully submitted,

By: _____


David S. Safran
Registration No. 27,997

Customer No. 25570

Roberts Mlotkowski & Hobbes P.C
P. O. Box 10064
McLean, VA 22102
Direct Telephone: (703) 584-3273

DSS:kmm